Etkin, Wilandacks and Makdisi to walk through before operation start
OK Yourself

PHENIX

Procedure for EM- Cal Pb- Sc Test Setup in 902 and 1008

procedure name

PHENIX Procedure No. pp-2.5.2.9-03

Revision: A **Date: 3-31-99**

Hand Processed Changes

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Approvals

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PHENIX S E & I Date

Cognizant Scientist/Engineer Date
/Activity Manager

3/31/99

PHENIX QA/Safety Date

For A. Etkin
G Makdisi 4/1/99
RHIC ES&H Date

REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	CURRENT OVERSIGHT
A	First Issue	3/31/1999	n/a	P. Kroon, W. Lenz, Y. Makdisi (for A. Etkin), (1 unintelligible)	n/a
RETIRED	Test & Setup Completed	3/8/2007	n/a	D. Lynch, R. Pisani & P. Giannotti for PHENIX	D.Lynch

PHENIX PbSc EMCal Test Setup

Version 1.1

Edouard Kistenev, BNL

Revisions:

Purpose

The purpose of this document is to describe the PHENIX PbSc test setup used to calibrate the PbSc calorimeter during assembly phase (bldg. 902) and to test assembled calorimeters on the floor in the assembly area (bldg. 902) and in the PHENIX Experimental Hall (bldg. 1008).

Elements of the Setup

1. PbSc Calorimeters

The PHENIX PbSc calorimeters are constructed of individual structurally independent supermodules held together inside the common load-bearing frames. Each calorimeter comprises 18 supermodules forming 3(high)x6(wide) solid matrix. This matrix of 18 supermodules is commonly identified as a PHENIX PbSc Sector.
Each PbSc supermodule is built of 36 modules (see ..\..\construction\module.ps), each module consists of four optically independent readout towers packaged together using thin stainless steel plates tack-welded to the front and back plates.
Each readout tower is viewed with PM115M Russian-made photomultiplier coupled to the bundle of penetrating wave shifting fibers. The range of High Voltages used to operate the photomultipliers is 1-2 kV (see ..\..\..\emcal\photoreadout\hv_system.doc). The potentials are distributed to the photomultiplier dynods via passive resistive voltage divider (see ..\..\..\emcal\photoreadout\q-bases\postscript\emc-tube-base-A.ps).

2. Assembly work on PbSc calorimeters at BNL

The EMCal supermodules were delivered to BNL preassembled. Assembly work on supermodules at BNL consisted of the following operations:

- unpacking;
- installation of the PMT housings;
- installation of the BNL-made elements of the monitoring system (PIN diod laser intensity monitor and related opical and electrical connectors).

Assembled supermodules were precalibrated with cosmic muons and finally loaded into Sector frames.

3. Calibration Setup

The calibration setup used to calibrate individual EMCal supermodules and later – preassembled EMCal Sectors is using readout electronics imported from WA98 experiment at CERN and VME based data acquisition system (one NIM crate, one CAMAC crate, one VME crate controlled by MVME137 crate controller running VXWORKS and an INDY 4600 workstation) to collect and analyse the data.
Calorimeter was simultaneusly exposed to cosmic muons (triggered by two scintillation counters) and to UV light from N2 laser distributed by the network of clear quartz and plastic fibers.

4. Installation of the test setup in MPH

Recent experience with recalibrating assembled EMCal Sectors using cosmic muons in 902 has shown that the calibration is well retained and that measuring the calorimeter response to laser exitation is in principle sufficient for accessing its operational readiness. This work was made in 902 on calorimeter sectors W2/W3 and more recently on E2/E3. Following those measurements we replaced ~ 2% of all PMT's installed into tested Sectors. Because of the scheduling conflicts the two bottom sectors in the West Arm (W0/W1) were installed untested. We suggest to complete this preoperational testing stage on the sector W0 in April, and on the W1 sector – in August, immediately after engineering run.

The test setup for MPH will be rearranged to fit into the space available on the west carriage in the alcove below W0. It will consist of:

a) Two half-racks with VME/CAMAC and NIM ctates, power supply, receiver and serial distributor boards;
b) LV power supply unit;
c) Class 3b N2 sealed catrige laser;
d) Gateway PC to control HV;
e) INDY workstation.

Only the second item in this list must actually be on the carriage next to the column of supermodules with installed electronics. Two halfracks with electronics and N2 laser will reside on the currently unused North platform, an office desk on the floor is needed to set up PC controlling HV and workstation collecting data (INDY).

All test equipment will be removed from the area for engineering run.

5. Other equipment

- Railing to insure the safety of the on-the-carriage work away from the building wall;
- Scintillation counters to trigger on cosmic muons (optional, we'll do it if time allows).

6. Operation of LSI N2 Laser (BNL 89469) in MPH

This laser is currently located in the Building 902 Annex and was prior moved to and from Physics Building and AGS experimental floor.

This laser is totally enclosed (except for tune-up and alignment). Once set up, it is designed to operate as essentially a turn-key system with very low output levels. No special training (i.e. Laser Safety Awareness, eye exam) is required when laser is operated in this fashion.

Within the interlocked enclosure around laser and optical train, it is possible to have a hazardous direct beam exposure. This enclosure is therefor a controlled area and the following guidelines apply when optics are being worked on as in tune-up / alignment with the enclosure open:

1 The area around the laser shall be cordoned off and posted so as to establish a temporary controlled area to keep unauthorized personnel out (i.e. doors posted).

2 Safety glasses which have an optical density of 1 @ 337 nm are to be worn when working with the laser beam.

3 The laser must be operated by qualified and authorized personnel. Those authorized are: C.Woody, E.Kistenev, S.Stall, G.David.

BROOKHAVEN NATIONAL LABORATORY
Safety and Environmental Protection Division

MEMORANDUM

Date: May 29, 1997

To: E. Kistenev

From C. Weilandics - LSO C. Weilandics

Subject **Operation of LSI Nitrogen Laser (BNL 89469) at 902 Annex**

This laser is currently located in the Building. 902 Annex and may be moved typically either to the Physics Building or the AGS experimental floor.

It is understood that the above laser is to be a totally enclosed (except for tune-up/alignment) laser system which, once set up, is designed to be operated as essentially a turn-key system with very low output levels. No special training (i.e. Laser Safety Awareness, eye exam) is required when the laser is operated in this fashion.

Within the interlocked enclosure around the laser and optical train, it is possible to have a hazardous direct beam exposure. This enclosure is therefore a controlled area and the following guidelines apply when the optics are being worked on as in tune-up/alignment with the enclosure opened:

1. the area around the laser shall be cordoned off and posted so as to establish a temporary controlled area and to keep unauthorized personnel out (i.e. doors posted). If it becomes necessary to operate in this fashion I would like to be contacted first to ensure that the necessary guidelines are followed
2. safety glasses which have an optical density of 1 @ 337 nm are to be worn when working with the laser beam. These will afford the necessary protection from the beam.
3. The laser must be operated by qualified and authorized personnel. In addition those individuals who will be working with the laser must have the requisite eye exams.

I do not consider a serious exposure outside the confines of the portable enclosure to be a credible hazard because of the filtration needed to lower the intensity, and the scatter and diffusion of the beam inside the diffusion box.

You may want to consider labeling the fibers in a manner which alerts people to the fact that light is being conducted through the fibers and that the responsible individuals should be contacted if the cables have to be removed/disconnected. This is more for operational continuity than anything else. In addition, all feed-throughs for inputs/outputs on the laser system enclosure should be labeled. I can supply any additional labels if needed.

Please keep me informed as to the changes in the status of the lasers' location, output characteristics, configuration, user status (additions/deletions) etc.

CW/rr
IH6620.97
cc: G. Adams
A. Etkin
R. Gill
Y. Makdisi
J. Throwe
C. Woody